and yet be able to pass off the resulting pustules and ulcerations, covering the chest, arms, and thighs, as common "boils!"

What I have seen of "syphilization," as practised by Prof. Boeck himself, would make it appear a less agreeable process than the above statement would imply. To be sure, the treatment was new at Charity Hospital, and the patients were probably aware of the fact and more or less suspicious. Yet they kept their beds during the greater part of the three or four months that the inoculations were going on, although they had every inducement to be up and out upon the grounds; and it often required all our powers of persuasion to lead them to consent to a continuance of the inoculations, so great was their discontent. Indeed, I never made a visit to the hospital without the fear that some of them had eloped, as actually happened in three instances. They represented that the soreness of the ulcerations was so great that they could scarcely endure the contact of the bedclothes, much less that of their daily dress, and the appearance of the sores corroborated their statement. I cannot well imagine how persons in their condition could have been about attending to their daily business. When they left the hospital they bore scars over the chest, arms, and thighs, which they will doubtless carry with them to their graves. Moreover, the serious tendency of an ulcer upon the thigh, in the case of Benner, to take on phagedenic action, shows that this practice is not devoid of danger. In short, I feel obliged to subscribe to the opinion expressed by Messrs. Lane and Gascoyen, that "syphilization is not a treatment which can be recommended for adoption."

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## ART. II.—*Orbital Aneurismal Disease, and Protrusion of the Eyeball from Venous Obstruction; with Remarks and Cases.* By THOMAS GEORGE MORTON, M. D., one of the Surgeons to the Pennsylvania Hospital, and Wills Ophthalmic Hospital, Philadelphia. Read before the Ophthalmological Society of Philadelphia, March, 1870. (With three wood-cuts.)

IN December, 1864, I ligated the common carotid for aneurism involving the right ophthalmic artery; and reported the case in a paper on Orbital Aneurisms published in this Journal for April, 1865, together with the statistics of the operations upon the carotid for this disease. Four cases of vascular disease of the orbit have since come under my notice, illustrating several varieties of orbital aneurism and vascular exophthalmos. In two of the cases the origin of the affection was traumatic, and in the other two anastomotic and congenital. The histories of these, with a brief review of my first case, now five years since the operation, and a few remarks upon the diagnosis and classification of these rare and interesting diseases may appear not unworthy of the attention of the Society.

It is well known that difficulties have arisen in effecting a diagnosis in regard to the nature of pulsating exophthalmia; and that errors have occurred after most carefully conducted examinations, and apparently convincing proofs of the disease being purely aneurismal. In Mr. Bowman's case the carotid was ligated for supposed aneurism of the orbit: death occurred on the eighteenth day. The arteries were found to be normal; while the ophthalmic vein, where it entered the cavernous sinus, was filled with a coagula. Mr. Hulke, in reporting the case, remarks:—

> "The internal carotid may have been partially compressed by the swollen walls of the cavernous sinus against the side of the body of the sphenoid bone, giving rise to the bruit. The plugging of the trunk of the ophthalmic vein . . . . accounts for the protrusion of the eyeball, and perhaps also for the pulsation, . . . . because each diastole of the ophthalmic artery must have been attended by a general momentary increase of the whole quantity of blood in the orbit, because its exit through the ophthalmic vein was cut off, and the resisting bony walls of the orbit could permit a distension in front only."—*Soelberg Wells*, p. 642, Philadelphia, 1869.

Mr. Travers' case[1] in 1809, described as "aneurism by anastomosis," is the first reported instance of aneurism of the orbit. It was probably a true aneurism, or a diffuse one following upon rupture of the former. Next is Mr. Dalrymple's[2] in 1813, which was very similar to Mr. Travers'; and this is also described as an "aneurism by anastomosis." Mr. Scott's[3] case, in 1834, was traumatic. The patient, a lad twelve years of age, fell into a ship's hold, striking his head; symptoms of concussion supervened, with extravasation of blood in the orbit and protrusion. The aperture in the vessel which permitted the blood to escape probably did not close, as further protrusion followed, with pulsation; the carotid was then tied with success. In 1829 Dr. Warren performed two similar operations, one with success, for aneurism of the orbit. Then Mr. Busk,[4] in 1839, describes a case of aneurismal tumour of the orbit, following injury; and believes that the cases of Travers and Dalrymple must have been instances of *true* aneurism. Dr. Dudley,[5] of Lexington, Ky., in 1839, tied the carotid successfully for true aneurism of the orbit. The operations of Jobert, Velpeau, Herpin, Petrequin, and Nunnelly follow; while successful cases of ligature in infants for congenital aneurismal disease of the orbit, anastomotic in character, are reported by Wood, Mott, and Walton. Van Buren, Curling, Syme, Bell, Buck, Lawrence, Hart, Nunnelly, Halstead, and Foot have each operated upon aneurisms of the orbit, or upon pulsating exophthalmia. In the last case that was reported by Williams, in 1867, Dr. Foot tied both carotids at intervals of thirty days for the relief of pulsating exophthalmia, and with perfect success. Mr. Nunnelly has reported no less than seven cases of orbital disease of a vascular nature, and he has proposed the term "*Vascular Protrusion.*" Two of these were traumatic, four spontaneous, and one due to cancer in the orbit, and cavernous sinus. Mr. Nunnelly believes that "in a great majority of such cases of protrusion of the eyeball there is no disease whatever in the orbit; the seat of it is most commonly intra-cranial. The protrusion of the eyeball is passive, and the other distressing symptoms are secondary, depending upon obstruction to the return of blood through the ophthalmic vein."[1] In the post-mortem examination in Mr. Guthrie's case,[2] which terminated fatally without operation, with symptoms similar to those of Travers and Dalrymple, *true* aneurisms the size of a large nut were found upon *each* ophthalmic artery; no distinct tumour could be felt in the orbit although the eye protruded almost beyond that cavity, with the hissing noise; vision was scarcely affected; the vena ophthalmica cerebralis was greatly enlarged and obstructed near where it passes through the foramen lacerum orbitale superius.

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[1] Med.-Chir. Trans., vol. ii. p. 1.

[2] Ibid., vol. vi. p. 111.

[3] Ibid., vol. xxii. p. 134.

[4] Ibid., vol. xxii. p. 124.

[5] Ibid., vol. xxxvii. p. 221.

True aneurism of the ophthalmic artery might at first produce only slight exophthalmos with bruit and pulsation, and with no very serious symptoms for perhaps a considerable period; yet with rapid growth or rupture of the sac, or if associated with venous obstruction, as probably would be the case, excessive protrusion, such as has been frequently described, would undoubtedly occur. Exophthalmos in some cases is doubtless due to the presence of the aneurismal tumour in the orbit, while in many cases the disease is post-orbital, as Mr. Nunnelly has stated, and the protrusion directly owing to venous obstruction. Case V. presents an interesting illustration of marked exophthalmos in each eye, but from different causes. Traumatic aneurismal disease is present in the right orbit with a comparatively slight protrusion; while excessive exophthalmos in the left eye is due simply to venous obstruction; pressure on the right carotid controlling the whirr and protrusion in the former, but pressure on the left side producing no effect upon either globe.

In true aneurism of the ophthalmic artery the bruit appears more prominent and positive during the diastole, with a momentary intermission; while in the cases of aneurism by anastomosis, which I have observed, the sound is continuous and vibratory, being of continued whirring character, although increased during diastole, occasionally quite feeble, and then resembles the sound produced when a large shell is held close to the ear.

Intra-cranial aneurisms, if situated near the sella-turcica would, as has been previously described, produce a bruit, and give rise to orbital protrusion from obstructing venous circulation.

Exophthalmos with bruit, and pulsation to a greater or less extent, may arise from several causes; while protrusion without the bruit may occur, as has long been recognized, simply from any cause interfering with the venous current. We may have vascular exophthalmos from—

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[1] Med.-Chir. Trans., vol. xlviii. p. 30.

[2] Guthrie, Operative Surgery of the Eye, 2d ed.

1. True aneurisms of the orbit.
2. Diffuse aneurisms of the orbit.
3. Aneurisms by anastomosis.
4. Obstructed venous circulation, intra or post-orbital.

1. True aneurisms of the ophthalmic artery in the orbit may, according to the size of the tumour, produce exophthalmos, pulsation, and bruit; while the presence of the aneurismal tumour may possibly be detected by the finger. With advance of the growth, come œdema, great protrusion of globe, pain, etc.; the pulsation and bruit being controlled by pressure on the carotid.

2. Diffuse aneurisms of the orbit, traumatic or consecutive, in which all the coats of the vessel, or the sac of a previous aneurism may have ruptured; or where the cellular tissue alone forms the sac. Symptoms are sudden: the patient often states having heard the report of a pistol or gun, immediately followed by an intense aneurismal whirr, thrill, and bruit, and pulsation of the globe, the protrusion gradually increasing. The whirr is synchronous with the diastole of the heart, with the momentary interruption. Gradual impairment of vision follows, and with the increase of the protrusion, loss of vision, and sloughing of the globe, and frequently intense pain. Pressure on the carotid controlling the bruit.

3. Aneurism by anastomosis.—In these cases the disease is generally congenital; and the orbit is often secondarily involved from the disease creeping in from integumentary nævi. The venous capillaries and trunks are affected by the extension of the disease, and the arterial network is also highly and morbidly developed. The face and scalp are so prone to this disease that we find more examples of this affection in these parts than all the rest of the body together; so that it is not surprising for the disease to involve the loose orbital tissues. Case III. (see Fig. 2) presents an unusually marked example of this disease, not only involving the orbit but the entire side of the face, and including the lower jaw and tongue; the protruded globe being forced outwards and downwards, and projected at least an inch. This affection may be limited to the orbit, and we should then have exophthalmos with or without pulsation and thrill, excessive or not, according to the development of the disease; but the latter symptom is *continuous* in character, and generally much less marked than in the two preceding forms. If there is an ill-defined tumour of varicose vessels this may be compressed and nearly emptied, filling up when pressure is removed. The disease advances gradually and often appears stationary after having attained considerable size: there is seldom pain, the patient being able to continue with ordinary work, and not experiencing any excessive cephalic noise. In case of free

communication with vessels from the opposite side, or when the growth advances from the orbit, a marked thrill is the result.

4. *a.* Vascular protrusion from venous obstruction.
    *b.* Exophthalmos with bruit and pulsation ; Graves's disease.

In the former the protrusion is due to distension of the orbital vessels from blocking up of the ophthalmic vein previous to its opening into the cavernous sinus, or to aneurism of the ophthalmic artery at its origin, or from any cause whereby the venous flow from the orbit is interfered with by tumour or otherwise. When the vein is obstructed, pressure being exerted upon the artery by the hardened vein, a bruit may be produced. In cases of aneurism of the ophthalmic artery previous to its entering the orbit, we would have symptoms of true aneurism ; but the protrusion would be passive from the obstruction of the venous circulation, yet the bruit would be, as above stated, as it is found in true aneurism. In vascular protrusion the vision is often more or less impaired, while occasionally after duration of years, vision has not been greatly interfered with or even destroyed. Venous dilatation alone forming a tumour in the orbital cavity may produce exophthalmos without bruit. An interesting case of this disease of several years' duration, is reported by Dr. De Ricci,[1] in which great protrusion occurred. In this case the globe was finally removed by Dr. Bowman to reach the tumour, which was then found to be composed of a mass of convolutions of veins dilated into sacculi.

Dr. Parrish, one of the former surgeons of the Wills Hospital, has also reported a case[2] of traumatic vascular tumour of the orbit, *without pulsation or bruit,* in which an attempt was made to remove the growth by ligature; after three ineffectual efforts the treatment was abandoned, and at the last report the disease was progressing. It was thought in this case that the arteries and veins were alike involved. In Graves's disease or exophthalmic goitre, for instance, we may have protrusion of the eyeballs to such an extent that the lids cannot, by any effort of the patient, be brought together over the cornea, which may lose its transparency; and vision, being consequently lost or greatly impaired, the eyeballs may finally become atrophic. Anæmia, with violent action of the heart, and gastric symptoms, usually accompany the bronchocele and exophthalmos. There is also a peculiar puffy condition of the eyelids similar to that observed after the administration of arsenic; and in the bronchocele there is frequently observed a distinct diastolic murmur. About a year ago I had under care a lady with this form of exophthalmos, excessive in character and associated with anæmia and bellows murmur, but no bronchocele; the globes were almost dislocated; the patient was presbyopic, but had no other difficulty with vision; only slight improvement followed the administration of tonics and stimulants. In Graves's disease "the exophthalmos is due to hypertrophy of the adipose cellular tissue of the orbit, and to a hyperæmic swelling of this tissue."

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[1] Dublin Quart. Journal, 1865, Nov. p. 338.

[2] American Journal of Medical Sciences, p. 357, October, 1841.

> "It was supposed by some authors that the pressure of the enlarged thyroid upon the cervical bloodvessels caused the protrusion of the eye. In opposition to this view it may, however, be urged that we often meet with very large bronchoceles, without any exophthalmos, and, on the other hand, as has been shown by Prael, the latter may exist without any enlargement of the thyroid gland. . . . . It is, however, far more probable that the affection is due to an irritation or neurosis of the sympathetic nerve, producing hypertrophy of the adipose tissue of the orbit and dilatation of the veins."—*Wells*, p. 621.

The involvement of the orbit by aneurismal tumours, true, false, or diffuse (spontaneous or traumatic), has been frequently observed; and for these the term aneurismal appears correct; while venous obstruction alone in many cases is the true cause of exophthalmos.

*Treatment.*—As but little can be expected from the internal administration of remedies, our attention must be directed either to the orbit or to the arrest of the circulation by pressure or ligation of the main artery in the neck. Electro-puncture was unsuccessfully tried by Petrequin in 1845. Injection of coagulating fluids into the orbital tumour has been followed by success in many cases; but it appears to be a dangerous operation unless the sac can be readily and certainly punctured.

Dr. H. D. Noyes, of New York,[1] reports six cases of cure. The injections consisted, in two instances of tannin; in one, of the acetate of iron; in three, of the sesquichloride of iron.

Compression of the carotid has been tried in very many cases, and several successful results of this treatment have been recorded, with, however, a preponderance of failures.

Gioppe, in 1856, employed compression intermittingly applied for four days with a complete success; he was followed by Scarramuzza in 1858, who used pressure for eighteen days intermittingly (7 hours and 20 minutes) with a like result; and again by Freeman in Canada. Five cases, three in England, one in France, and one in Poland, have since failed. In a recent case of pulsating exophthalmos with bruit, at the Wills Hospital, pressure was abandoned, after a most faithful trial. A large number of aneurisms and varices of the orbit have been subjected to ligation of the carotid, the success attendant upon this operation having been quite unusual. When there is danger of the eye being compromised, or even without this, when the disease is increasing, and compression has failed, ligation should be resorted to.

In excessive hypertrophy, with great protrusion, as in Case III., although not advancing, where there is great danger of immediate increase and possible hemorrhage, the carotid should be ligated. Even in suspected malignant disease, with exophthalmos, bruit, pain, disturbed vision, and rapid growth, ligation would be quite justifiable if not demanded. The disease would probably be temporarily arrested, and pain would be alleviated by the diminished congestion.

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[1] New York Medical Journal, March, 1869.

Of the 32 cases of all forms of orbital aneurism which I collated in 1865, 30 were subjected to ligation of the carotid artery. Three of these were partially successful, two were unsuccessful, three died, 22 were cured.

Dr. Noyes has tabulated in the *New York Medical Journal,* March, 1869, 45 cases of carotid ligation from all sources; of this number, three were partially successful, five were failures, five were followed by death, 32 were cured, showing equally fair results.

CASE I. *True Aneurism of the Ophthalmic Artery successfully treated by tying the Common Trunk of the Right Carotid.*—This operation was performed upon the patient before you (Mrs. P.) on the 4th of December, 1864. The earliest symptom of the aneurismal disease was observed during the month of May of the same year, when she was two months pregnant; her attention then was directed to a slight noise in the right temple, which gradually increased. In the early part of November, just before her confinement, she awoke in a fright from a sound sleep with what she supposed to be the report of a pistol; but was assured by her sister, who was with her at the time, that it was only a dream; from this time the noise became much more marked and distressing in character. The eye now began to protrude, the vessels about the orbit became prominent, and vision was somewhat involved. Some weeks after delivery, which was accomplished without any difficulty, I was consulted; the protrusion was very marked, and pulsation of the globe had become a very prominent symptom; the globe was pushed upwards and forwards; pupil dilated; convergent squint and double images; vision impaired; the vessels adjacent to the orbit were enormously distended and pulsated strongly. The thrill was distinctly aneurismal in character, with the momentary intermission, being similar to the puffing of a locomotive, to which the patient herself compared the noise. True aneurism of the ophthalmic artery in the orbit was diagnosticated, this being concurred in by my colleagues of the Pennsylvania Hospital, and others who saw the case. The carotid having been tied the ligature dropped on the 17th day; the wound closed up firmly, and on the 24th day vision was normal and all evidences of the original disease had vanished.

The patient has ever since continued well; there is no impairment of vision, and the fundus of each eye, is found to be normal. The patient has been again confined, in December, 1867, without experiencing any difficulty either prior to or after delivery. The right side of the patient's face is observed to be decidedly less full than the left; the tissues are apparently less nourished, and a slight atrophic state has resulted. Upon the left side of the face free perspiration occurs, while the right side exhibits quite the contrary condition.

The patient was exhibited to the society.

All the symptoms of true aneurismal disease were present in this case; and had ligation of the artery been delayed, the same excessive exophthalmos, with symptoms described in first recorded cases, would have undoubtedly occurred.

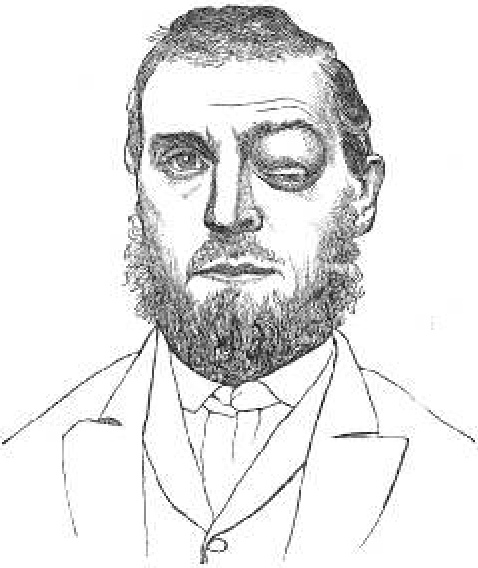
CASE II. *Aneurism following a Blow upon the Brow; Orbital Tumour, Exophthalmos, Pulsation, and Bruit.*—J. L., æt. 25, native of Ireland, has been in this country since June last (1869), has always been healthy. Four years ago he received a blow with the end of a loaded whip, directly over the left eye; considerable ecchymosis resulted, the tissues in and about the orbit being much infiltrated; a month afterwards this infiltration had very much disappeared and no further trouble was experienced for some twelve months afterwards, when a slight swelling or lump appeared which could be grasped by the fingers. This tumour was soft and compressible; the growth advanced slowly during the next two years, the eye being gradually displaced downwards and outwards.

During the past year the growth has increased rapidly, having doubled in size within the last six months; he has also experienced for a long time a slight hissing or purring noise, more at night when lying in bed, or when at work in a stooping posture.

Vision has been gradually diminishing ever since the tumour began to develop, and the eye has been almost hidden from view.

*Present Condition.*—Exophthalmos strongly marked; a tumour above the eye extending backwards, soft, compressible; with some effort the globe can be forced partly within the orbit, the tumour diminishing, and with the removal of the pressure the growth slowly regains its size. There is a slight pulsation, with a feeble *bruit.* Pressure on the carotid does not entirely control the *whirr.* Left eye is projected forward and downward one inch; the globe above is flattened horizontally; the lower border of right iris is on a level with upper border of left; pupil active; external ciliary vessels engorged, especially over the lower and outer section.

Fig. 1.



*Ophthalmoscopic Examination.*—In the left eye the arteries are exceedingly minute; veins full and dilated; disk atrophied, and irregular; fundus pale. Right eye, fundus pale; disk slightly irregular; normal vision.

Left or diseased eye, $V = \frac{1}{100}$. Right eye, normal acuity of vision. Left side, bruit heard most distinctly over globe, and also slightly over globe of right side by transmission. Left eye projects forward with each pulsation.

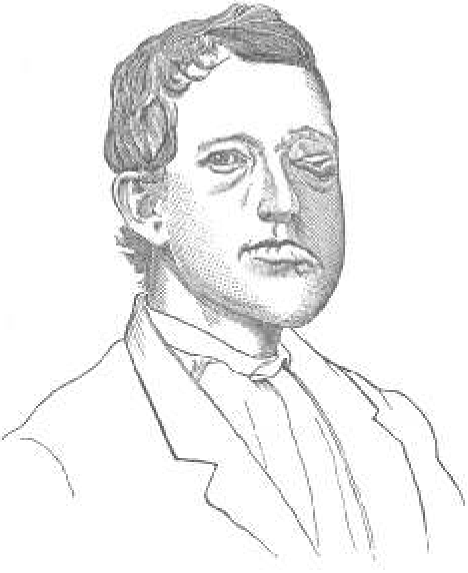
In this case some of the vessels of the orbit were ruptured, which accounted for the sudden and excessive effusion; absorption then occurred; the vessel or vessels, arterial and venous, which were ruptured, became dilated, and an aneurism by anastomosis has gradually developed; with slight bruit, pulsation, and thrill, forming a compressible, varicose tumour. In regard to operative interference, a partial removal of the tumour with the knife, and ligation of its deeper portion would probably be sufficient.

The patient was exhibited to the Society. Fig. 1.

CASE III. *Aneurism by Anastomosis, with Orbital Tumour; Involvement of the Entire Side of Head and Face by the Extension of the Disease.*—L. L., æt. 25, married, general health good. Soon after birth, the left side of his face was observed to be rather more fully developed than the right; as far back as he can remember the left eye has been prominent. Many years ago he noticed a rushing sound in his head and eye, which is more intense at times, the protrusion and noise being increased by heavy work or the stooping posture.

*Present Condition.*—The right eye is normal as regards vision and position. The left presents excessive exophthalmos; the conjunctiva is chemosed, highly vascular, and thrown into folds; the upper part of the cornea being on a line with the lower edge of the cornea of the sound eye Intense pulsation and marked thrill are perceptible to the touch on the temple and eyeball, and the noise can be heard at some distance from the patient's head. A considerable tumour, irregular in shape, flattened above, can be felt deeply in the orbit and at the inner angle of the eye;

Fig. 2.



in this tumour the thrill is very marked and intense in character. The orbital portion of the tumour is globular, readily compressible, but with removal of constriction filling up instantly. Pressure applied to the carotid entirely controls the aneurismal thrill, quickly produces a marked diminution in the size of the tumour, and stops all pulsation. Left eye can count fingers with great difficulty at about one foot; all movement of this eyeball is lost; a marked continuous bruit can be traced in the vessels of the face, while the left side of the tongue is enormously hypertrophied; this varicose aneurismal condition invades the entire side of the head; the mucous membrane of the tongue and mouth is thrown into folds, while the opposite side is quite normal.

Pressure upon the left carotid controls all bruit and thrill with immediate lessening of the orbital tumour and exophthalmos. Ligation of that vessel has been advised as the affection is increasing, and the risks of hemorrhage are considerable.

The patient was exhibited to the Society. Fig. 2.

CASE IV. *Aneurism by Anastomosis involving the Orbit at the Inner Angle.*—Miss P., æt. 12 years, although otherwise a healthy girl, has had a tumour growing gradually since infancy at the inner side of the right orbit. More recently it has been projecting beyond the angle, and forming a growth a little more than an inch in diameter. It is larger at times and more prominent under excitement. The pulsation is slight in the tumour, and sometimes can scarcely be felt. The child says she feels or hears a sound in her head all the time. The tumour can be forced by pressure almost away, after which it gradually refills; the exertion of going up stairs produces great prominence. The eye is not displaced nor is vision interfered with.

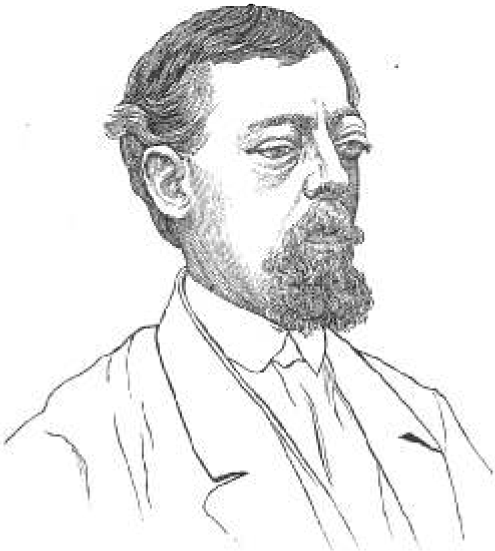
This case (photograph shown) is one of anastomotic aneurism. The slight pulsation, the subsidence of the tumour under pressure, the continued noise in the head, the absence of all very active symptoms, and the slow growth, with its congenital character, all indicate the nature of the affection. In this case, unless the disease is arrested in its early growing stage, there is every probability of its assuming a more serious character. Injections of coagulating fluid, excision of the tumour, or ligature, would probably prove successful.

CASE V. *Traumatic Aneurism of the Right Orbit, associated with extreme Exophthalmos of the Left Eyeball, from Venous Obstruction.*—S. G., æt. 25, received a violent blow on the right side of the head, on the 20th of June, 1868. Immediate protrusion of the right eyeball followed, and the left became prominent eight weeks afterwards. A hissing sound was noticed in the right orbit, directly after the accident, perceptible only with each stroke of the pulse. When admitted into the Wills Hospital in August, 1869, both eyes presented exophthalmos (see Figure 3). The left globe was almost dislocated, but could be easily pressed back into the orbit, and readily held there; but when pressure was removed it immediately bulged out, but presented neither pulsation nor the slightest bruit.

The right eye pulsated strongly, and resisted pressure; there were intense thrill and bruit which could be controlled by pressure on the carotid of the same side, and under this pressure the globe could be placed almost in its normal position. Pressure on the left carotid produced no effect on either eye.

The case was diagnosticated as aneurism of right orbit, with vascular protrusion of the left, simply from venous obstruction, being thus an illustration of two forms of exophthalmos. Compression of the right carotid allowed the globe on that side to be replaced to a considerable extent, thus favouring the view that an intra-orbital tumour existed, which was partially, or entirely emptied, along with the cessation of all the aneurismal symptoms, when the arterial circulation was controlled.

Fig. 3.



Complete notes of this case, of which a mere abstract has been here given, were read before the Society. The detailed history will be found in the present number of the Journal in the report by Dr. Harlan, who had charge of the patient, and to whose paper the reader is referred.

## Art. III.—*Case of Traumatic Aneurism of Orbit, treated by Compression.* By George C. Harlan, M.D.

S. G., æt. 25, a brakesman on Pennsylvania Railroad, was admitted to the Wills Ophthalmic Hospital on the 14th of August, 1869. On the 20th of June, 1868, while standing on the platform of a car in motion, he received a violent blow upon the head from another car moving in the opposite direction on a side track, which fractured the lower maxilla on both sides and inflicted several scalp wounds. He stated that he was partially insensible for three weeks, and that when he returned to consciousness his right eye was very prominent and swollen, and that he heard "a roaring sound like falling water in his eye" with every stroke of the pulse, which he had never been free from since. A "red tumour" which had appeared